Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): In an iterative decoder, an iterative decoding method for decoding received digital data elements representing source data elements coded according to a turbo coding scheme, the iterative decoding method comprising:

computing a set of branch metrics for the received digital data elements based upon at least one received digital data element;

computing a set of forward recursive metrics based upon the set of branch metrics according to an approximation:

$$A_k(m) = \log[\alpha_k(m)] = \max_{m'} \{\Gamma(u_k, c_k, m', m) + A_{k-1}(m')\} - H_{A_k};$$

computing a set of backward recursive metrics based upon the set of branch metrics according to an approximation:

$$B_k(m') = \log[\beta_k(m')] = \max_{m} \{\Gamma(u_k, c_k, m', m) + B_{k+1}(m)\} - H_{B_k}; \text{ and}$$

computing a set of output extrinsic Log Likelihood Ratio (LLR) values based upon the set of backward metrics and the set of forward metrics according to an equation:

$$\Lambda(d_k) = \log\left[\sum_{e:u(e)=d_k=+1} e^{\{A_{k-1}(m')+\Gamma_1(c_k,m',m)+B_k(m)\}}\right] - \log\left[\sum_{e:u(e)=d_k=0} e^{\{A_{k-1}(m')+\Gamma_0(c_k,m',m)+B_k(m)\}}\right];$$

and

outputting the set of output extrinsic Log Likelihood Ratio (LLR) values.

Claims 2-5 (canceled).

Claim 6 (original): The iterative decoding method of claim 1, wherein computing the set of backward recursive metrics comprises:

using a sliding window for processing less than the entirety of received digital data elements.

Claim 7 (original): The iterative decoding method of claim 6, wherein using a sliding window for processing less than the entirety of received digital data elements comprises:

initializing the set of backward recursive metrics with equal probabilities.

Claim 8 (original): The iterative decoding method of claim 6, wherein using a sliding window for processing less than the entirety of received digital data elements comprises:

initializing the set of backward recursive metrics with the set of forward recursive metrics.

Claims 9-33 (canceled).

Claim 34 (new): Apparatus for decoding received digital data elements representing source data elements coded according to a turbo coding scheme, the apparatus comprising:

branch metric logic operably coupled to compute a set of branch metrics for the received digital data elements based upon at least one received digital data element;

forward recursive metric logic operably coupled to compute a set of forward recursive metrics based upon the set of branch metrics according to an approximation:

$$A_k(m) = \log[\alpha_k(m)] = \max_{m'} \{\Gamma(u_k, c_k, m', m) + A_{k-1}(m')\} - H_{A_k};$$

backward recursive metric logic operably coupled to compute a set of backward recursive metrics based upon the set of branch metrics according to an approximation:

$$B_k(m') = \log[\beta_k(m')] = \max_{m} \{\Gamma(u_k, c_k, m', m) + B_{k+1}(m)\} - H_{B_k};$$

extrinsic logic operably coupled to compute a set of output extrinsic Log Likelihood Ratio (LLR) values based upon the set of backward metrics and the set of forward metrics according to an equation:

$$\Lambda(d_k) = \log\left[\sum_{e:u(e)=d_k=+1} e^{\{A_{k-1}(m')+\Gamma_1(c_k,m',m)+B_k(m)\}}\right] - \log\left[\sum_{e:u(e)=d_k=0} e^{\{A_{k-1}(m')+\Gamma_0(c_k,m',m)+B_k(m)\}}\right];$$

and

output logic operably coupled to output the set of output extrinsic Log Likelihood Ratio (LLR) values.

Claim 35 (new): Apparatus according to claim 34, wherein the backward recursive metric logic comprises:

logic for using a sliding window for processing less than the entirety of received digital data elements.

Claim 36 (new): Apparatus according to claim 35, wherein the logic for using a sliding window for processing less than the entirety of received digital data elements comprises:

logic for initializing the set of backward recursive metrics with equal probabilities.

Claim 37 (new): Apparatus according to claim 35, wherein the logic for using a sliding window for processing less than the entirety of received digital data elements comprises:

logic for initializing the set of backward recursive metrics with the set of forward recursive metrics.

Claim 38 (new): An apparatus for decoding received digital data elements representing source data elements coded according to a turbo coding scheme, the apparatus comprising:

a first iterative decoder;

a second iterative decoder;

an interleaver operably coupled to receive first output extrinsic Log Likelihood Ratio (LLR) values from the first iterative decoder and to provide interleaved output extrinsic Log Likelihood Ratio (LLR) values to the second iterative decoder; and

a deinterleaver operably coupled to receive second output extrinsic Log Likelihood Ratio (LLR) values from the second iterative decoder and to provide deinterleaved output extrinsic Log Likelihood Ratio (LLR) values to the first iterative decoder, wherein each iterative decoder comprises:

branch metric logic operably coupled to compute a set of branch metrics for the received digital data elements based upon at least one received digital data element;

forward recursive metric logic operably coupled to compute a set of forward recursive metrics based upon the set of branch metrics according to an approximation:

$$A_k(m) = \log[\alpha_k(m)] = \max_{m'}\{\Gamma(u_k, c_k, m', m) + A_{k-1}(m')\} - H_{A_k};$$

backward recursive metric logic operably coupled to compute a set of backward recursive metrics based upon the set of branch metrics according to an approximation:

$$B_k(m') = \log[\beta_k(m')] = \max_{m}\{\Gamma(u_k, c_k, m', m) + B_{k+1}(m)\} - H_{B_k};$$

extrinsic logic operably coupled to compute a set of output extrinsic Log Likelihood Ratio (LLR) values based upon the set of backward metrics and the set of forward metrics according to an equation:

$$\Lambda(d_k) = \log\left[\sum_{e:u(e)=d_k=+1} e^{\{A_{k-1}(m')+\Gamma_1(c_k,m',m)+B_k(m)\}}\right] - \log\left[\sum_{e:u(e)=d_k=0} e^{\{A_{k-1}(m')+\Gamma_0(c_k,m',m)+B_k(m)\}}\right];$$

and

output logic operably coupled to output the set of output extrinsic Log Likelihood Ratio (LLR) values.

Claim 39 (new): Apparatus according to claim 38, wherein the backward recursive metric logic comprises:

logic for using a sliding window for processing less than the entirety of received digital data elements.

Claim 40 (new): Apparatus according to claim 39, wherein the logic for using a sliding window for processing less than the entirety of received digital data elements comprises:

logic for initializing the set of backward recursive metrics with equal probabilities.

Claim 41 (new): Apparatus according to claim 39, wherein the logic for using a sliding window for processing less than the entirety of received digital data elements comprises:

logic for initializing the set of backward recursive metrics with the set of forward recursive metrics.

Claim 42 (new): An apparatus comprising a digital storage medium having embodied therein a program for controlling a programmable logic device to decode received digital data elements representing source data elements coded according to a turbo coding scheme, the program comprising:

branch metric logic programmed to compute a set of branch metrics for the received digital data elements based upon at least one received digital data element;

forward recursive metric logic programmed to compute a set of forward recursive metrics based upon the set of branch metrics according to an approximation:

$$A_k(m) = \log[\alpha_k(m)] = \max_{m'}\{\Gamma(u_k, c_k, m', m) + A_{k-1}(m')\} - H_{A_k};$$

backward recursive metric logic programmed to compute a set of backward recursive metrics based upon the set of branch metrics according to an approximation:

$$B_k(m') = \log[\beta_k(m')] = \max_m \{\Gamma(u_k, c_k, m', m) + B_{k+1}(m)\} - H_{B_k};$$

extrinsic logic programmed to compute a set of output extrinsic Log Likelihood Ratio (LLR) values based upon the set of backward metrics and the set of forward metrics according to an equation:

$$\Lambda(d_k) = \log\left[\sum_{e:u(e)=d_k=+1} e^{\{A_{k-1}(m')+\Gamma_1(c_k,m',m)+B_k(m)\}}\right] - \log\left[\sum_{e:u(e)=d_k=0} e^{\{A_{k-1}(m')+\Gamma_0(c_k,m',m)+B_k(m)\}}\right];$$

and

output logic programmed to output the set of output extrinsic Log Likelihood Ratio (LLR) values.

Claim 43 (new): The apparatus of claim 42, wherein the backward recursive metric logic comprises:

logic for using a sliding window for processing less than the entirety of received digital data elements.

Claim 44 (new): The apparatus of claim 43, wherein the logic for using a sliding window for processing less than the entirety of received digital data elements comprises:

logic for initializing the set of backward recursive metrics with equal probabilities.

Claim 45 (new): The apparatus of claim 43, wherein the logic for using a sliding window for processing less than the entirety of received digital data elements comprises:

logic for initializing the set of backward recursive metrics with the set of forward recursive metrics.

Claim 46 (new): The apparatus of claim 42, wherein the programmable logic device comprises one of:

a microprocessor;

a digital signal processor; and

a field programmable gate array.